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| WORKMAN NYDEGGER 60 EAST SOUTH TEMPLE 1000 EAGLE GATE TOWER SALT LAKE CITY, UT 84111 | | | EXAMINER PAK, SUNG H | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/693,613

Applicant(s)

HE ET AL.

Examiner

Sung H. Pak

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12, 13, 15-20, 22-32 and 34-36 is/are rejected.
- 7) ☒ Claim(s) 11, 14, 21 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's amendment filed 7/09/2007 has been entered. All pending claims have been carefully reconsidered in view of the amendment.

Response to Arguments

Applicant's arguments filed 7/09/2007 have been fully considered but they are not persuasive.

Starting on page 11 of the applicant's response, it is argue that figures and paragraphs of the prior art cited in the office action are directed to a combiner configuration of the device, which is opposite to the claimed configuration as recited in independent claims of the instant application (paragraph 3, page 11 of response filed 7/09/2007).

The examiner respectfully submits that although paragraphs 0060 and 0066 of *Nikolov* discuss the operation of the thin film wire-grid polarizer in a combiner context (shown in Fig. 11a, Fig. 11b), *Nikolov* fully contemplates the "splitter" configuration of the SAME device (i.e. Fig. 11a, Fig. 11b), and the operation of the thin film wire-grid polarizer would be identical in the "splitter" configuration as well.

Specifically, paragraph 0058 of *Nikolov* states:

[0058] Another advantage realized by the optical PBC/S device of the present invention is illustrated by the optical PBC/S device 500 of FIGS. 11a and 11b. The optical PBC/S device 500 has a thin film wire-grid polarizer 550 positioned between two collimating/focusing lenses 510 and 520. Three input/output optical fibers 570, 580, and 590 are provided and configured such that the device can function as a beam splitter or a combiner according to the principles discussed in reference to the optical PBC/S devices 100 and 200 of FIGS. 7 and 8 respectively. But in the optical PBC/S device 500, a fourth optical fiber 593 has been added. The optical PBC/S device 500 is configured such that the position of the fourth optical fiber 593 is a mirror image of the

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optical fiber 590 with respect to the plane defined by the thin film wire grid on the thin film wire-grid polarizer 500.

(emphasis added)

Therefore, *Nikolov* fully anticipates the claimed limitations in a “splitter” configuration, in the manner recited in the present application.

Alternatively, even looking at just the “combiner” configuration of *Nikolov*, the recited claim limitations would be anticipated. That is because the applicant has chosen to claim a DEVICE using FUNCTIONAL limitations/INTENDED-USE limitations, where a device is limited by functions performed by the claimed apparatus (i.e. “...configured to split an input beam...”, “... changing an angular orientation of said polarization axis... changes a coupling ratio”, etc).

As stated in MPEP §2114, “[w]hile features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art **in terms of structure rather than function**.” *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (emphasis added). A claim containing “a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). As such, while the functional language limitations are **not ignored**, such limitations are not given patentable weight, and the claimed limitations are anticipated if a prior art apparatus is **capable** of performing the claimed function. MPEP §2114.

In the present case, the “combiner” configuration is fully CAPABLE of being used as a “splitter” when the light is inputted from the element ‘593’ in Figs. 11a-11b, such that the light is “split” and transmitted into elements “570”, “580”, or “590” depending on the orientation of the element “550”. Since the “combiner” configuration of *Nikolov* is fully capable of function in identical manner as that claimed and recited in the instant application, the claim rejection is proper.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 8-10, 12-13, 15-16, 18-20, 22-28, 30-32, 34-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Nikolov et al (US 2003/0223670 A1).

Nikolov reference discloses an optical coupler comprising: an input polarization maintaining fiber having a polarization axis (paragraph 0049, paragraph 0053); at least one optical component optically coupled to said input optical fiber (‘250’ Fig. 8), said at least one optical component splitting an input light beam received from said at least one optical component into a first output light beam having a first polarization state and a second output light beam having a second polarization state (Fig. 8, paragraph 0054); at least a first and second

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output optical fiber to receive said first and second output light beams respectively (Fig. 8);
wherein changing an angular orientation of said polarization axis relative to an optical axis of
said at least one optical component changes a coupling ratio (please refer to paragraph 0066 in
light of paragraph 0053; paragraph 0060 in light of paragraph 0053; also see Fig. 12);

wherein said optical component is a polarization beam splitter (paragraph 0041);

wherein fibers are mounted in a ferrule (paragraph 0073);

wherein said ferrule is mounted in a housing and said housing further holds a lens to
focus/ collimate said input beam into said optical component, or focus/collimate output beams
into output fibers (the lenses being '210', '220' Fig. 8- although the housing is not explicitly
depicted in the figure, there must be some housing for mounting the ferrule and the lens for
establishing optical alignment);

wherein said angle is between about 5 to 15 degrees (Fig. 12).

Regarding claims 3-4, 26, Nikolov fully discloses (and therefore anticipates) a prior art
set up utilizing pair of birefringent crystals (paragraphs 0005-0008).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 7, 17, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nikolov et al (US 2003/0223670 A1).

Nikolov reference discloses an optical device as discussed above, except it does not explicitly teach the use of optical fiber end surface that is cut at an angle. However, such angle cut is well known and common in the optical fiber art. It is well known to one of ordinary skill in the art that such angle cut reduces back reflection and reduces coupling loss. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Nikolov to have optical fibers with endfaces having angle cuts.

Allowable Subject Matter

Claims 11, 14, 21, 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, as discussed in the previous office action.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571)272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sung Pak/
Sung H. Pak
Primary Patent Examiner
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